

The invention also relates to a hologram recording material composition comprising (A) an allyl-based prepolymer having at least one allyl group in a molecule thereof and a molecular weight of 10,000 to 100,000, (B) a (meth)acrylate-based compound having at least one polymerizable unsaturated group in a molecule thereof, (C) a photo-polymerization initiator, and a non-aqueous solvent, wherein a difference between a refractive index of said allyl-based prepolymer (A) and a refractive index of a polymer of said (meth)acrylate compound (B) is 0.005 or more (preferably 0.01 or more).

DETAILED DESCRIPTION OF THE INVENTION

The allyl-based prepolymer (A) used in the invention is a prepolymer being soluble in organic solvents and insoluble in water and having at least one allyl group in its molecule, and representative examples thereof include a diallyl phthalate-based prepolymer. The allyl-based prepolymer (A) can be a homopolymer of an allyl-based monomer (a1) or a copolymer of the allyl-based monomer (a1) and the other copolymerizable monomer(s) (a2).

Examples of the allyl-based monomer (a1), namely an allyl compound and/or a methallyl compound (hereinafter referred to as "(meth)allyl compound") are (meth)allyl alcohol, (meth)allyl chloride, (meth)allyl acetate, (meth)allyl benzoate, (meth)allyl isovalerate, (meth)allyl caprylate, (meth)allyl caproate, (meth)allyl formate, (meth)allyl cinnamate, (meth)allyl salicylate, (meth)allyl dihydrojasmonate, (meth)allyl phenylacetate, (meth)allyl propionate, (meth)allyl butyrate, mono(meth)allyl adipate, mono(meth)allyl sebacate, mono(meth)allyl phthalate,

mono(meth)allyl isophthalate, mono(meth)allyl terephthalate, mono(meth)allyl succinate, mono(meth)allyl trimellitate, mono(meth)allyl succinate, mono(meth)allyl ricinolate, mono(meth)allyl maleate, di(meth)allyl adipate, di(meth)allyl sebacate, di(meth)allyl phthalate, di(meth)allyl isophthalate, di(meth)allyl terephthalate, di(meth)allyl succinate, di(meth)allyl trimellitate, di(meth)allyl succinate, di(meth)allyl ricinolate, di(meth)allyl maleate, tri(meth)allyl phosphate, tri(meth)allyl isocyanurate and the like.

Examples of the monomer (a2) which can copolymerize with the allyl-based monomer (a1) are styrene, α -methylstyrene, divinylbenzene, vinyl biphenylcarboxylate, mono(meth)acrylate such as benzyl methacrylate, phenoxyethyl methacrylate, phenoxyethyl acrylate, 2-hydroxy-3-phenoxypropyl acrylate, methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, 2-ethylhexyl methacrylate, isodecyl methacrylate, n-lauryl methacrylate, n-stearyl methacrylate, methoxydiethylene glycol methacrylate, cyclohexyl methacrylate, tetrahydrofurfuryl methacrylate, isobornyl methacrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, 2-hydroxybutyl methacrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, glycidyl methacrylate, tert-butyl methacrylate, isostearyl methacrylate, n-butoxyethyl methacrylate, isoamyl acrylate, lauryl acrylate, stearyl acrylate, butoxyethyl acrylate, ethoxyethylene glycol acrylate, methoxytriethylene glycol acrylate, tetrahydrofurfuryl acrylate, isobornyl acrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate,

2-acryloyloxyethylsuccinic acid, 2-acryloyloxyethylphthalic acid, isoctyl acrylate, isomyristyl acrylate, isostearyl acrylate and vinyl acetate, and the like.

In the allyl-based prepolymer (A) which is the copolymer, a weight ratio of the allyl-based monomer (a1) to the copolymerizable monomer (a2), (a1) : (a2) is 20 (excluding 20) to 100 : 80 to 0, preferably 30 (excluding 30) to 100 : 70 to 0, more preferably 40 to 100 : 60 to 0 expressed as percentage by weight.

The allyl-based prepolymer (A) is preferably a homopolymer of a diallyl phthalate-based monomer or a triallyl isocyanurate-based monomer, or a copolymer of another copolymerizable monomer and the monomer. More preferably, it is the homopolymer of the diallyl phthalate-based monomer or the copolymer of the copolymerizable monomer and the monomer. The most preferably, it is the homopolymer of the diallyl phthalate-based monomer.

There can also be suitably used a terpolymer of epichlorohydrin, ethylene oxide and allyl glycidyl ether, a terpolymer of diethylene glycol glycidyl methyl ether, ethylene oxide and allyl glycidyl ether, a terpolymer of 2-[1, 3-bis(2-methoxyethoxyethoxy)propyl glycidyl ether, ethylene oxide and allyl glycidyl ether, and the like.

The diallylphthalate-based monomer as a starting material of the diallyl phthalate-based prepolymer is a compound selected from the group consisting of a diallylorthophthalate monomer, a diallylisophthalate monomer and diallyltetraphthalate monomer, and a combination of two or more of them. In order to obtain the diallyl phthalate-based prepolymer by